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09/630,258	08/01/2000	Marc Hoffman	ADI-005XX	7200

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EXAMINER

DO, CHAT C

ART UNIT PAPER NUMBER

2124

DATE MAILED: 08/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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# Office Action Summary

Application No.

09/630,258

Applicant(s)

HOFFMAN ET AL.

Examiner

Chat C. Do

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 09 July 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_



**DETAILED ACTION**

1. This communication is responsive to Amendment A, filed 7/9/2003.
2. Claims 1-8 are pending in this application. Claims 1, 5, and 8 are independent claims. In Amendment A, claims 1-2, 5, and 8 are amended. This action is made final.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claim 1, the limitation “the order calculated” lacks an antecedence basis and is unclear. For examination purposes, the examiner considers this limitation as “an order calculated” and in any order according to the butterfly operation. Claims 5 and 8 have the same problem.

Thus, claims 2-4 and 6-7 are also rejected for being dependent on the rejected base claims 1 and 5.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakai et al. (U.S. 6,115,728).

Re claim 1, Nakai et al. disclose a method for computing an FFT in Figures 1-22 (first embodiment), the method comprising:

(a) receiving a plurality of time-ordered first data values, first data values having a total of N-data points (Figure 3 discloses the data input arrive in time-order for every symbol  $x(0)$ - $x(N-1)$ );

(b) sequentially storing in a first memory each of time-ordered plurality of first data values (Figure 3 RAM#0 and col. 8 lines 30-32) in the time order;

(c) providing in a second memory a plurality of twiddle factors stored in sequential locations in a bit reversed order (104 in Figure 1 and Figure 8);

(d) reading R input butterfly data values of plurality of first data values where each of R butterfly data values are separated by N/R first data value in plurality of first data value ( $N = 32$ ,  $R = 4$ , and separated by 8 different groups of input data);

(e) performing a radix R butter fly calculation on R butterfly input data (Figure 4 stage 0, this is a standard method of implementing FFT, the left data are the data that read from the RAM#0 using RAM address generator);

(f) providing R butterfly output data values (output of stage 0);

(g) sequentially storing R butterfly output data values in a third memory (RAM#1 and col. 8 lines 30-32) in the order calculated (Figure 16); and

(h) performing steps (c) to (g)  $N/R \times 2$  times (compute other groups 1-7 in Figure 4).

Re claim 2, Nakai et al. further disclose in Figure 6 the steps of sequentially replacing plurality of first data values in first memory (SYMBOL INPUT RAM) with plurality of sequentially stored data in third memory location (SYMBOL OUTPUT RAM); and repeating steps (c) – (h) a total of  $\log_r(n)$  times (Figure 32 wherein  $r = 2$  and  $n = 8$ ; therefore  $\log_2(8) = 3$  stages to be performed and Figures 8 and 16).

Re claim 3, Nakai et al. further disclose in Figure 5 R is equal to 2 (middle box; radix-2 butterfly operation).

Re claim 4, Nakai et al. further disclose in Figure 5 R is equal to 4 (top box; radix-4 butterfly operation).

Re claim 5, it is an apparatus claim of claim 1. Thus, claim 5 is also rejected under the same rationale in the rejection of rejected claim 1.

Re claim 6, it is an apparatus claim of claim 3. Thus, claim 6 is also rejected under the same rationale in the rejection of rejected claim 3.

Re claim 7, it is an apparatus claim of claim 4. Thus, claim 7 is also rejected under the same rationale in the rejection of rejected claim 4.

Re claim 8, it is a DSP apparatus claim of claim 1. Thus, claim 8 is also rejected under the same rationale in the rejection of rejected claim 1.

*Response to Arguments*

7. Applicant's arguments filed 7/9/2003 have been fully considered but they are not persuasive.

a. The applicant argues in page 7 that Nakai et al. fail to disclose the storage of data in a unity stride fashion wherein the input data is stored in the time-order as cited in the claims.

The examiner respectfully submits that Figure 7 stage 1 discloses an FFT processing  $[i+2]$  wherein the symbol input is input into the RAM in the time-order from  $x(0)$  to  $x(7)$ .

b. The applicant argues in page 8 lines 3-8 that Figures 6-7 of Nakai et al.'s reference disclose the input data is stored sequentially ordered as  $x_0$ ,  $x_2$ ,  $x_4$ ,  $x_6$ ,  $x_1$ ,  $x_3$ ,  $x_5$ , and  $x_7$  which is differed from the present invention which stored the input data in time-order manner.

The examiner respectfully submits that Figure 7 stage 1 discloses an FFT processing  $[i+2]$  for storing the input data in time-ordered manner wherein the symbol input is input into the RAM in the time-order as  $x(0)$ ,  $x(1)$ ,  $x(2)$ ,  $x(3)$ ,  $x(4)$ ,  $x(5)$ ,  $x(6)$ , and  $x(7)$ .

c. The applicant argues in page 8 and page 9 last paragraph that some stages of the FFT processor taught in Nakai, the output data of a butterfly calculator stage within the FFT processor is not stored in the order that output data is calculated.

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The examiner respectfully submits that the claim language does not clearly disclose a particular order for storing the output into a third memory. Therefore, the examiner considers this limitation as any order depending on the result of the butterfly operation. In this case, the butterfly operation calculated  $x(0)$ ,  $x(4)$ ,  $x(1)$ ,  $x(5)$ ,  $x(2)$ ,  $x(6)$ ,  $x(3)$ , and  $x(7)$ . Therefore, the circuit is stored the above order calculated results into the RAM as seen in stage 1 of Figure 7.

- d. The applicant argues in page 10 that Figure 33 of Nakai et al. does not disclose the limitations cited in the claims.

The examiner respectfully submits that Figure 33 of Nakai et al. is a third embodiment which the examiner does not use in the previous Office Action.

### ***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (703) 305-5655. The examiner can normally be reached on M => F from 7:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaki Kakali can be reached on (703) 305-9662. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Chat C. Do  
Examiner  
Art Unit 2124

August 1, 2003



**CHUONG DINH NGO  
PRIMARY EXAMINER**